

IN THE CLAIMS

Claims 1-54 were previously cancelled. Claims 55, 57, 60, 65, 66, 74, 80, 84, 85, 87, 89-96 and 102 are currently amended. Claims 56, 58, 59, 64, 86, 88 and 97-100 are currently cancelled. Claims 61-63, 67-73, 75-79, 81-83, 101 and 103 are carried forward, all as follows.

Claims 1-54 (Cancelled)

55. (Currently Amended) A device for regulating at least one register in a printing press comprising:

at least first and second ~~one~~ printing groups ~~group~~;

at least one forme cylinder, one transfer cylinder and one counter-pressure cylinder in each of said at least first and second ~~one~~ printing groups, said at least first and second printing groups being ~~group~~ and adapted to each print one color of a multiple color printed image on an imprinting substrate being printed in multiple colors in said at least first and second printing groups ~~group~~ and travelling in a substrate direction of travel;

an image sensor, said image sensor being ~~usable~~ adapted to record a picture of ~~said~~ multiple color printed image of an entire ~~a~~ width of said imprinting substrate extending transversely ~~transverse~~ to said substrate direction of travel ~~and to generate data correlated with said image~~;

an evaluating unit, usable ~~said evaluating unit being~~ adapted to receive said picture of ~~data of~~ said entire width of ~~said~~ multiple color printed image recorded

during a running production of said printing press and to compare multiple parameters of said picture data with reference data of a previously recorded multiple color printed reference picture image, and said evaluation unit being adapted to separate said picture of said multiple color printed image and said reference picture each into separate color components separations and to perform a relative position determination of each of said separate color components of said picture of said printed image separations with respect to each of said separate color components separations of said previously recorded multiple color printed reference picture image;

a forme cylinder drive mechanism for each of said at least first and second printing groups and adapted to be controlled separately from a drive mechanism for said counter-pressure cylinder assigned to each said at least one forme cylinder;

an actuator for each said forme cylinder drive mechanism, said evaluation unit being adapted to generate a separate an actuating command to each said forme cylinder drive mechanism actuator to selectively regulate a register of each respective one of said forme cylinders cylinder in response to said data comparison, said evaluating unit performing said relative position determination of each of said color components separations of said width of said picture of said multiple color image with respect to each of said color components of said previously recorded multiple color printed reference picture as provided by said image sensor; and

a pre-printing stage located upstream, in said direction of travel of said substrate, said printing press, said data of said image recorded during said running production being correlated with said reference data of said previously recorded multiple

color printed reference picture image being formed recorded in said pre-printing stage, said reference picture image having proper registration of said multiple color image.

56. (Cancelled)

57. (Currently Amended) A device for controlling register and color density in a printing press comprising:

at least first and second-one printing groups each-group having at least one forme cylinder, one transfer cylinder and one counter-pressure cylinder, said at least first and second printing groups group imprinting a multiple color printed image on an imprinting substrate being printed in said at least first and second-one printing groups group and traveling in a substrate direction of travel during a running production of said printing press;

an image sensor, said image sensor being usable to record a picture of said multiple color printed image of an entire-a width of said imprinting substrate transverse to said substrate direction of travel ~~and to generate data correlated with said image~~;

an evaluating unit usable to receive said picture image data of said entire width of said multiple color printed image recorded printed during said running production of said printing press and to compare multiple parameters of said picture with receive reference data of a previously generated multiple color printed picture image and to separate each of, said evaluation unit separating said running production multiple color printed picture image data and said previously generated multiple color

printed reference picture-image data into separate color components separations, said evaluating unit further performing a relative positional determination of each of said color components separations of said running production multiple color picture printed image data in relation to said color components separations of said previously generated multiple color printed reference picture-image data;

an ink supply to each of said at least first and second-one printing groups, each said ink supply group and having an ink supply drive mechanism;

a register regulatory drive mechanism for at least one of said at least first and second printing groups; and

means in said evaluating unit for converting-correcting differences detected by said relative positional determination of each of said color components between said running production multiple color printed picture-image data and said previously generated multiple color printed reference picture-image data in one of a substrate transport direction and a direction transverse to said transport direction into actuating commands for each said ink supply drive mechanism for said at least first and second printing groups and for said register regulatory drive mechanism for at least one of said at least first and second printing groups.

58. (Cancelled)

59. (Cancelled)

60. (Currently Amended) The device of claim 57 further including a forme cylinder drive mechanism for each of said at least first and second printing groups and adapted to be controlled separately from a drive mechanism for said counter-pressure cylinder assigned to each said forme cylinder.

61. (Previously Presented) The device of claim 55 wherein said evaluating unit performs said relative position determination by a correlation method.

62. (Previously Presented) The device of claim 55 wherein said evaluating unit performs said relative position determination by a cross-correlation method.

63. (Previously Presented) The device of claim 55 wherein said relative position determination is performed several times.

64. (Cancelled)

65. (Currently Amended) The device of claim 55 wherein said register of each said forme cylinder is one of a circumferential register, a lateral register, and a diagonal shifting of each said forme cylinder with respect to said transfer cylinder associated with said forme cylinder.

66. (Currently Amended) The device of claim 55 wherein each said actuator regulates one of a phase position and an angular relation of its one of said at least first and second forme cylinders-cylinder.

67. (Previously Presented) The device of claim 57 further including a data network connected to said evaluating unit, said drive mechanisms being correlated to said data network.

68. (Previously Presented) The device of claim 55 further including a company network and a connection between said evaluating unit and said company network.

69. (Previously Presented) The device of claim 55 further including an input and output unit adapted to provide correction options for said actuating command, said evaluating unit being in a bi-directional data exchange with said input and output unit.

70. (Previously Presented) The device of claim 69 further including a monitor in said input and output unit and adapted to display said recorded image.

71. (Previously Presented) The device of claim 55 further including a memory device in said evaluating unit and adapted to store sequences of said recorded image.

72. (Previously Presented) The device of claim 57 wherein said printing press applies at least one printed image to said imprinting substrate.

73. (Previously Presented) The device of claim 57 wherein said regulation takes place simultaneously with an inspection of said printed image.

74. (Currently Amended) The device of claim 55 ~~further including several of said printing groups arranged in said printing press in said direction of transport of said imprinting substrate and wherein said image sensor is located in an outlet of a last one of said at least first and second printing groups.~~

75. (Previously Presented) The device of claim 55 further including a delivery device for said printing press and wherein said image sensor is located at said delivery device.

76. (Previously Presented) The device of claim 55 wherein said evaluating unit checks at least one of a shading change and a registration maintenance during said running production of said printing press.

77. (Previously Presented) The device of claim 76 wherein said check is performed on each printed copy in said printing press.

78. (Previously Presented) The device of claim 55 wherein said evaluating unit classifies checked printed copies into groups of different quality.

79. (Previously Presented) The device of claim 55 wherein said evaluating unit is adapted to store data for use in determining quality of printed products.

80. (Currently Amended) The device of claim 57 further including at least one of an imprinting substrate transport device and an imprinting substrate marking device and means in said evaluating unit for issuing an actuating command to said at least one of said transport device and said marking device when said relative positional determination-~~image~~ data exceeds a permissible tolerance limit.

81. (Previously Presented) The device of claim 55 further including an angle encoder installed on said at least one printing group and adapted to synchronize a frequency of recording of said images with a transport speed of said imprinting substrate.

82. (Previously Presented) The device of claim 81 wherein said angle encoder is installed in said printing group having said image sensor.

83. (Previously Presented) The device of claim 81 wherein said angle encoder transmits an output signal to said evaluating unit.

84. (Currently Amended) The device of claim 57 further including means changing said ink supply to at least one of said at least first and second printing groups using said evaluating unit in response to a shading change exceeding a permissible tolerance limit.

85. (Currently Amended) The device of claim 55 wherein said evaluating unit is adapted to change at least one register in said printing press to obtain color registration accuracy.

86. (Cancelled)

87. (Currently Amended) The device of claim 57 further including a pre-printing device located upstream, in a direction of travel of said imprinting substrate, said data of a previously generated multiple color printed picture image being received from correlated with an image generated in said pre-printing device stage.

88. (Cancelled)

89. (Currently Amended) The device of claim 55 wherein further including several of said printing groups, each said forme cylinder of each of said at least first and second printing groups is group being controlled independently of said forme cylinder of another of said at least first and second several printing groups.

90. (Currently Amended) The device of claim 89 wherein said evaluating unit is adapted to set one of mutual angular relation and phase relation of each said forme cylinder involved in printing said color image in said imprinting substrate.

91. (Currently Amended) The device of claim 55 wherein each said forme cylinder drive mechanism is coaxial with a shaft of said forme cylinder.

92. (Currently Amended) The device of claim 55 wherein said drive mechanism for each said forme cylinder is rigidly connected with a shaft of each said forme cylinder.

93. (Currently Amended) The device of claim 55 ~~further including several printing groups in said printing press and wherein said counter-pressure cylinders in said at least first and second~~ several printing groups are mechanically connected.

94. (Currently Amended) The device of claim 93 further wherein said counter-pressure cylinders-cylinder in said at least first and second-several printing groups have a common drive mechanism.

95. (Currently Amended) The device of claim 93 further including a drive mechanism for said counter-pressure cylinders and being separate from a drive mechanism for said forme cylinders and said transfer cylinders of said at least first and second-several printing groups.

96. (Currently Amended) The device of claim 55 further wherein each said forme cylinder drive mechanism drives said transfer cylinder associated with each-said forme cylinder of said at least first and second printing groups.

97-100. (Cancelled)

101. (Previously Presented) The device of claim 55 wherein said evaluating unit evaluates suitable portions of a special color image different from standard colors of a colored image.

102. (Currently Amended) The device of claim 55-97 wherein said evaluating unit stores said printed images in a memory device.

103. (Previously Presented) The device of claim 102 wherein said printed images are stored in said memory device at a desired position.